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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/408,142 09/29/99 MUKOUYAMA

M HIRA1140

EXAMINER

HM22/0209

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~~MARK I~~
ART UNIT

PAPER NUMBER

1651
DATE MAILED:

02/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/408,142

Applicant(s)
Mukouyama et al

Examiner
Irene Marx

Group Art Unit
1651



☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-14 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-14 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

The application should be reviewed for errors.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is vague, indefinite and confusing in the recitation “in terms of mole” and “once turned into a homogeneous solution”. It is unclear what is intended.

In claim 2, the antecedent basis for “resultant suspension containing L-aspartic crystals” is unclear, since there is no clear separation of steps in the process of claim 1 and the production of a “suspension” is not indicated.

Claim 3 is confusing in that the antecedent basis of the phrase “moisture containing fumaric acid crystals” is unclear. Is it the fumaric acid added? Clarification in the claim is required.

The antecedent basis for “said solution” recited in claim 5 is unclear, since several solutions are recited in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nore *et al.* taken with Brun *et al.*, Pavia *et al.* and Tan *et al.*.

Nore *et al.* teaches a method of producing aspartic acid wherein fumaric acid is added to a ammonium aspartate followed by heating to about 50°C and crystallization of a homogenous solution at a temperature of about 25° to 100°C (See, e.g., examples).

The reference differs from the invention as claimed in that the ammonium aspartate solution is not produced by enzymatic means from ammonium fumarate. However, the reference discloses that this is an advantageous method, since it permits recycling of ammonium fumarate produced in the crystallization process (See, e.g., column 2, lines 23-52). With respect to the cooling rate of the precipitation reaction, the reference indicates that the temperature drops 20°C in 15 minutes, which appears to correspond to the rate as claimed. Even if it is not, it is submitted that the adjustment of the cooling rate for optimization of the crystallization process would have been within the purview of the ordinary artisan in this art.

In addition Brun *et al.* teach a similar process using a temperature of 135°C and gradual cooling of the reaction productions (See, e.g., examples). In addition the reference teaches the crystallization process of aspartic acid in the presence of ammonium fumarate (See, e.g., Examples 6).

The references differ from the claimed invention in that a process of crystallization using reduced pressure and recycling of the evaporated water is not disclosed. However, Pavia *et al.* adequately demonstrate that it is routine in the art of crystallization to remove the solvent used in the crystallization process by a variety of processes, which include reduced pressure, such as by using a vacuum desiccator (See, e.g., page 514). Moreover, Tan *et al.* demonstrate the use of condensing and recycling to maximize the yield of crystallized product (See, e.g., Example 1).

Therefore, one of ordinary skill in the art would be motivated to use reduced pressure to remove water from the crystallizing solution of aspartic acid and recycle the water obtained by returning it to the reaction vessel with a reasonable expectation of success of obtaining a favorable yield of crystalline aspartic acid.


Therefore, it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the process taught by Nore *et al.* by adjusting the reaction and crystallization temperatures according to the teachings of Brun *et al.*, if necessary, and by using the crystallizations protocols suggested by Pavia *et al.* and Tan *et al.* for the expected benefit of maximizing the yield of pure aspartic acid useful for nutritional purposes and as an intermediate in the production of further amino acids and of proteins.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irene Marx whose telephone number is (703) 308-2922.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn, can be reached on (703) 308-4743. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196 .


Irene Marx
Primary Examiner
Art Unit 1651